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A METHOD AND SYSTEM FOR EFFICIENTLY DRAWING NURBS  
SURFACES FOR 3D GRAPHICS

ABSTRACT OF THE DISCLOSURE

5       The present invention comprises a computer implemented process and  
system for rendering curves or surfaces as 3D graphics on a display. The system  
of the present invention includes a computer system having a processor, a bus,  
and a 3D graphics rendering pipeline. The curves or surfaces are modeled by non-  
uniform rational B-splines (NURBS). The process of the present invention  
10 functions by receiving a NURBS model for rendering from a software program  
running on the host processor. The NURBS model defines a curve or surface. The  
process of the present invention efficiently converts the NURBS model to a Bezier  
model using the hardware of the graphics rendering pipeline. The Bezier model  
describes the same curve or surface. The process of the present invention  
15 subsequently generates a plurality of points on the curve or surface using the  
Bezier model and the graphics rendering pipeline. The points are then used by the  
graphics rendering pipeline to render the curve or surface defined by the Bezier  
model. Alternatively, a NURBS model is directly evaluated into a plurality of  
points on a curve or surface, and in turn, rendered into the curve or surface. This  
20 direct rendering of the NURBS model is implemented using the graphics rendering  
pipeline.

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